

Work Order ID 51220

August 10, 2009 2:09:27 PM



Page 1

Item ID: D212-664-201TRN

Accept



Setup Start



Revision ID: C

Stop



Item Name: Crosstube Turning Detail

Start Date: 8/10/09 Start Qty: 1.00



Cust Item ID:

Required Date: 8/12/09 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

CZ WF

Date: 09/08/10

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D212-664-241

Rev C

100

0.00



Mori Seiki

MORI SEIKI CNC LATHE LARGE

Memo

0.00

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio
FA114 2-Turn first side as per Folio FA114 3- File transition lines smooth.

a.m 09 - 08 - 11 ①

110

QCI- Inspect dimensions to dimension sheet

0.00



QC

Memo

0.00

Quality Control

a.m 09 - 08 - 11 ①

120

MORI SEIKI CNC LATHE LARGE

0.00



Mori Seiki

Memo

0.00

Mori Seiki CNC Lathe Large

1-Turn second side as per Folio FA114. 2- File transition lines smooth. 3-
Remove sand and plugs 4- scribe batch # and part # as per dwg

a.m 09 - 08 - 11 ①

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Page 2

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Approvals: Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

130

QC1 - Inspect dimensions to dimension sheet

0.00



QC

Memo

0.00

Quality Control

Q.m 09-08-11 Q

140

QC8 - Inspect parts - second check

0.00



QC

Memo

0.00

Quality Control

1 Ø - AWM 8-8-12

150

Crosstubes Chemical Conversion

0.00



HandFXtube

Memo

0.00

Hand Finishing Crosstubes

Chemical Conversion Coat as per within 24 hours of machining

1 Ø - AWM 8-8-12

Work Order ID 51220

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Page 3

Item ID: D212-664-201TRN

Accept



Setup Start



Revision ID: C

Stop



Item Name: Crosstube Turning Detail

Start Date: 8/10/09 Start Qty: 1.00



Cust Item ID:

Required Date: 8/12/09 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

160

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

a.m 09 - 08 - 12 ①

170

Packaging

0.00



Packaging

Memo

0.00

Packaging

Identify and stock in kanban rack Location:

X-TUBE CELL

1 8 - 14M9-8-12

180

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

Aug 08.12

~~a.m 09.08-11 ①~~

CL09/08/12

Picklist Print

August 10, 2009 2:09:26 PM

Work Order ID: 51220

Parent Item: D212-664-201TRNRevC

Parent Item Name: Crosstube Turning Detail

Comments:

Start Date: 8/10/09

Required Date: 8/12/09

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D6006-129RevA		Manufactured	No			120	Each	64.0000	1.0000			



Crosstube Material

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
LG	64	
23970	2	
26550	15	
34690	11	
38338	36	

a.m 08.08.11 ①

DART AEROSPACE LTD	Work Order:	51220
Description: Crosstube Assembly (205/212 High Aft)	Part Number:	D212-664-241
Inspection Dwg: D212-664-241 Rev: C		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.200	+/-0.010	0.200	/		
	R0.063	+/-0.010	R0.063	/		
	2.990	+0.005/-0.000	2.993	/		
	5.237	+/-0.030	5.251	/		
	2.600	+0.005/-0.000	2.602	/		
	2.686	+0.005/-0.000	2.690	/		
	2.770	+0.005/-0.000	2.775	/		
	2.854	+0.005/-0.000	2.857	/		
	2.938	+0.005/-0.000	2.940	/		
	3.021	+0.005/-0.000	3.026	/		
	3.133	+0.005/-0.000	3.136	/		
	3.179	+0.005/-0.000	3.180	/		
SIDE B	0.200	+/-0.010	0.200	/		
	R0.063	+/-0.010	R0.063	/		
	2.990	+0.005/-0.000	2.993	/		
	5.237	+/-0.030	5.251	/		
	2.600	+0.005/-0.000	2.602	/		
	2.686	+0.005/-0.000	2.690	/		
	2.770	+0.005/-0.000	2.775	/		
	2.854	+0.005/-0.000	2.857	/		
	2.938	+0.005/-0.000	2.940	/		
	3.021	+0.005/-0.000	3.026	/		
	3.133	+0.005/-0.000	3.136	/		
	3.179	+0.005/-0.000	3.180	/		
	124.36	+/-0.020	124.360	/		

Measured by:	A.M	Audited by:	AHM	Prototype Approval:	N/A
Date:	09.08.11	Date:	9-8-12	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	05.04.27	New Issue (P/O D412-664-201)	KJ/JLM	
B	06.03.09	Tolerance for 5.237 was +/-0.001	KJ/JLM	
C	07.05.08	Dwg Rev. updated	KJ/JLM	

DART

DESIGN <i>PH</i>	DRAWN BY <i>PH</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>J</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D212-664-241	REV. C SHEET 1 OF 3
DATE 07.03.08		TITLE CROSSTUBE ASS'Y (205/212 HI AFT)	SCALE NTS
A	00.12.12	NEW ISSUE	
B	05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	
C	07.03.08	REMOVE -1009 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	

RELEASED
07.04.24 P

PER E.C.N. 885

DEO ATTACHED

Qty	Part Number	Description
X	D212-664-241	CROSSTUBE ASSEMBLY (205/212 HIGH AFT)
1	D6006-129	CROSSTUBE
2	D2940-1	SUPPORT
4	D3595-063-530	RUBBER CUSHION
4	MS21920-28	CLAMP (OR MS21920-30)
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947- 100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

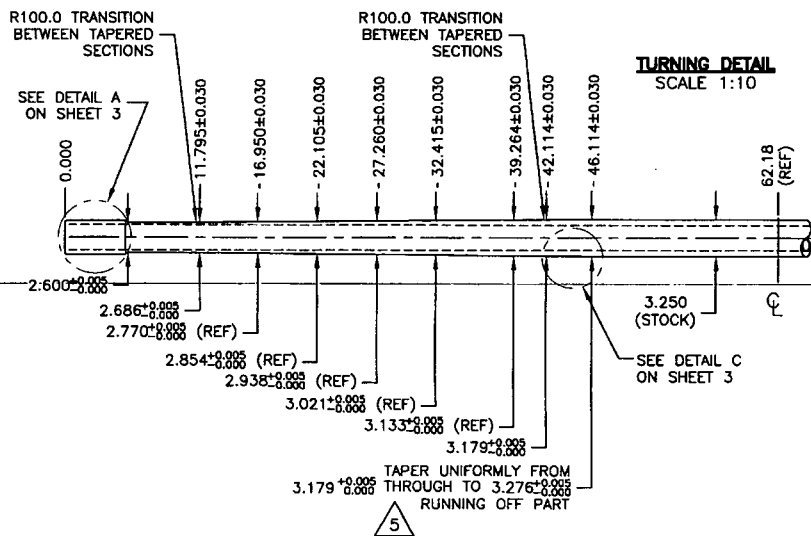
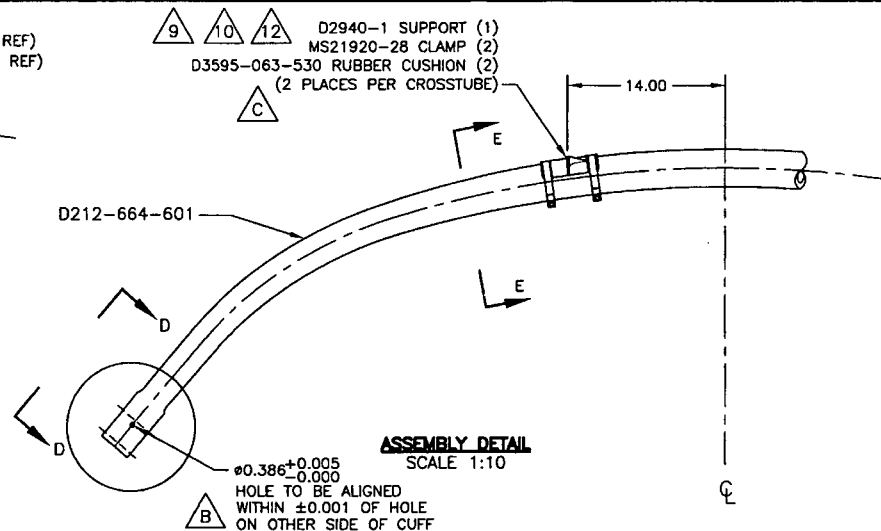
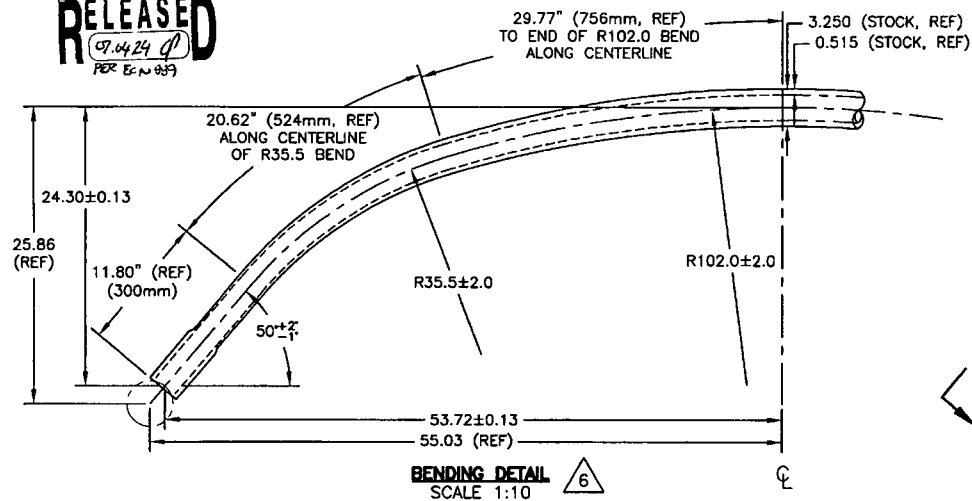
- 209/08/10*
W/O: 51220
- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 2) MATERIAL: MANUFACTURED FROM D6006-129
FINISHED LENGTH = 124.36 ± 0.020
 - 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
 - 4) PART IS SYMMETRIC ABOUT CENTERLINE
 - 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
 - 6) BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
 - 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
 - 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
 - 9) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
 - 10) INSTALL MS21920-28 CLAMPS WITH D3595-063-530 RUBBER CUSHIONS TO SECURE D2940-1 SUPPORT ON TOP SIDE OF CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT
NOTE: MS21920-30 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
 - 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
 - 12) TORQUE CLAMPS 80 TO 100 IN-LB.

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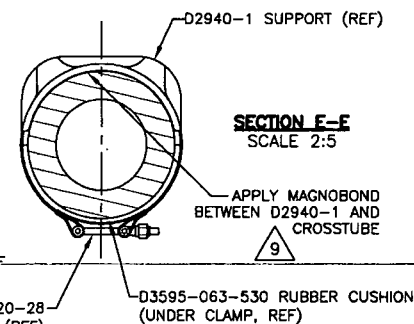
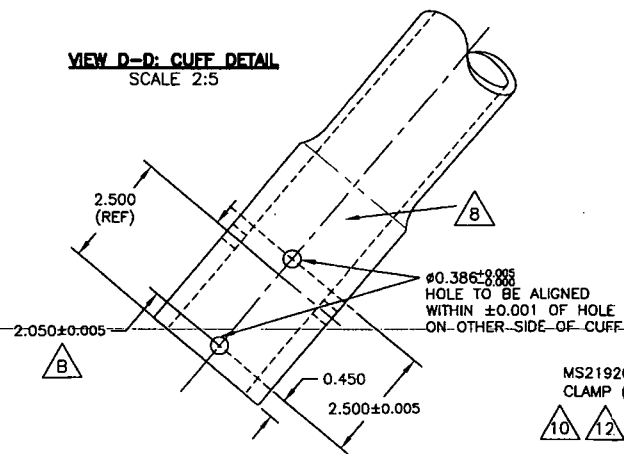
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C207168/10
W10: 51220

RELEASED
07.04.24
PER E-20-939



VIEW D-D: CUFF DETAIL
SCALE 2:5



DEO ATTACHED

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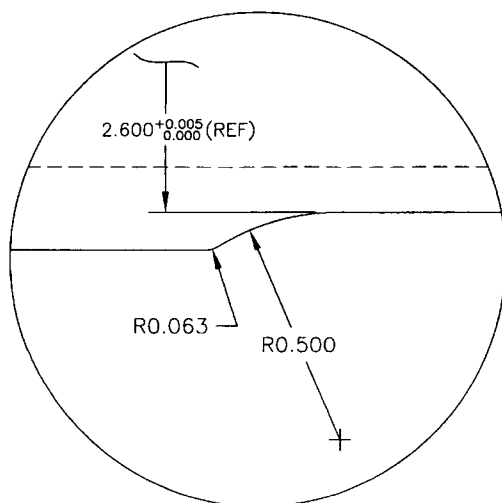
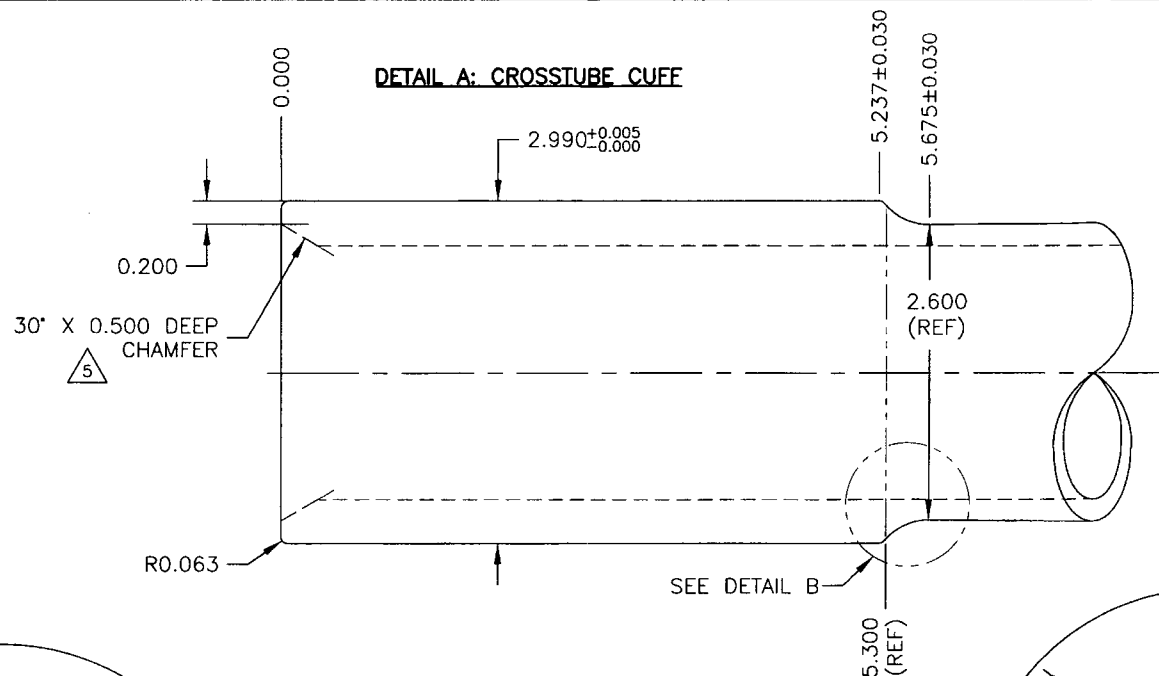
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DESIGN PH	DRAWN BY PH	DART	DART AEROSPACE LTD. HARRISBURG, ONTARIO, CANADA
CHECKED J	APPROVED A	DRAWING NO. D212-664-241	REV. C SHEET 2 OF 3
DATE 07.03.08	TITLE CROSSTUBE ASS'Y (205/212 HI AFT)	SCALE 1:10	

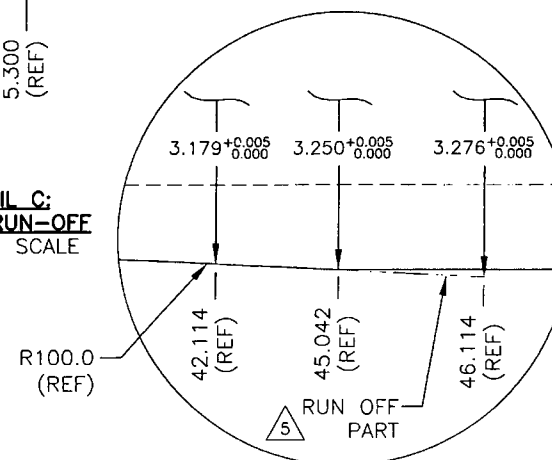
C209108/10
W/O; 51220

RELEASED
07.04.14
188 ECH 869

DEO ATTACHED



**DETAIL C:
TAPER RUN-OFF**
NOT TO SCALE



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PH

CHECKED

PH

DATE

07.03.08

DRAWN BY

PH

APPROVED

PH

TITLE

CROSSTUBE ASS'Y (205/212 HI AFT)

DART

DART AEROSPACE LTD.
HARRISBURG, ONTARIO, CANADA

DRAWING NO.
D212-664-241

REV. C

SHEET 3 OF 3

SCALE

1:1

DRAWING NO. D212-664-241	TITLE CROSSTUBE	REV. C	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D212-664-241-C-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>UP</i>	CHECKED <i>RF</i>	MFG. APPR. <i>E</i>	APPROVED <i>MD</i>	DE APPR. <i>HA</i>		
DATE 09.05.01	DATE 09.06.15	DATE 09.06.15	DATE 09/06/16	DATE 09/06/16		

CL 09/08/10
W/D: 5/220

CHANGE:

ADD THE FOLLOWING CROSSTUBE ASSEMBLY:

Part Number	Description
D212-664-241B	CROSSTUBE ASSEMBLY (214 HIGH AFT)

THE D212-664-241B CROSSTUBE HAS THE SAME PARTS LIST AS THE D212-664-241 CROSSTUBE. HOWEVER, INSTALL THE SUPPORTS AS SHOWN IN FIGURE 1 OF THIS ENGINEERING ORDER. THE NEW KIT IS OTHERWISE ASSEMBLED PER THE D212-664-241 CROSSTUBE.

RELEASED
09/06/22 JAP

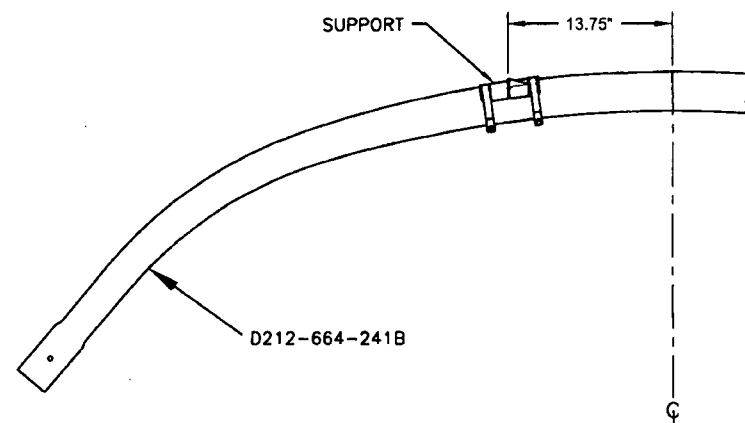


FIGURE 1 - SUPPORT INSTALLATION